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OIT #0936-88
28 September 1988

25X1 MEMORANDUM FOR: [redacted]
Information Systems Officer, DS&T

25X1 FROM: [redacted]
Acting Director of Information Technology

SUBJECT: Ethernet Test

REFERENCE: Your Memo (DS&T-622-88), dtd 25 July 88, Same Subject

1. I understand your interest in the Ethernet capabilities of the Intecom IBX, and I agree that we must explore the suitability of this feature before any decision can be made to use it operationally.

2. The IBX switches we currently own do not have a built-in Ethernet local area network capability. Thus, we would have to acquire additional Intecom hardware and software before we could perform the test. The cost of setting up a live test environment would be approximately $30,000, excluding any DEC equipment which you offered to provide. Delivery of the Intecom components normally takes eight weeks after they receive our purchase order.

3. Since all of OIT's current IBX switches are used operationally, any test would have to be conducted on the classified, production IBX switch in
25X1 [redacted] with the potential for some disruption to the operation of that switch.

4. If the DS&T is willing to fund the cost of this test, and to tolerate
25X1 any [redacted] IBX disruptions during the test, then we will work with you to conduct it. But I want to be clear on one crucial point; before OIT will agree to support Ethernet over the IBX in a production environment, we would need to agree on a long-term DS&T set of requirements, policy, and architecture for its use. Please let me know if these terms are acceptable to you.

25X1 [redacted]

Attachment:
Reference

DOWNGRADE TO UNCLASSIFIED WHEN
SEPARATED FROM ATTACHMENT

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SUBJECT: Ethernet Test

25X1 OIT/ESG [redacted] (22 Sep 88) (ESG-0031-88)

25X1 Rewritten: OIT [redacted] (28 Sep 88)

Distribution:
Orig - Addressee
25X1 1 - [redacted] Esg
1 - ESG Chrono
2 - D/OIT
3 - OIT Registry

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DS&T-622-88
25 July 1988

MEMORANDUM FOR Ed Maloney
Director, Office of Information Technology, DA

25X1 FROM: [redacted]
Information Systems Officer, DS&T

SUBJECT: Ethernet Test

1. The DDS&T is presently engaged in planning for the use of local area networks to interconnect work groups who share local computing resources. We understand that OIT has adopted a Statement of Direction for Local Area Networks that recommends the use of either Ethernet (IEEE Standard 802.3) or Token Ring (IEEE Standard 802.5).

25X1 2. We also understand from a briefing delivered to the S&T on the PBX by [redacted] that the Intecom IBX has built-in support for the Ethernet protocol. Since most S&T buildings will be equipped with IBX switches, we would like to know whether we can plan on the use of the IBX for local area networks.

3. We understand that the Ethernet capability has never been tested on the Agency's IBX installation. For our planning, we need to know whether the Ethernet capability of the PBX will be a practical alternative for us. Therefore, we request that OIT conduct an operational test of the Ethernet capability of the PBX. We would like the test to involve multiple terminals
25X1 connected over Ethernet to a VAX minicomputer [redacted] We will provide access to the VAX and all necessary support from our end.

25X1 4. If there are any questions, the DS&T POC is [redacted]
25X1 [redacted]

5. Thank you for your assistance.

25X1 [redacted]

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Attachment A

DRAFT

IBX Ethernet Questions

a. What are the security implications of Ethernet on the IBX? Specifically, what are the capabilities to segregate networks and traffic on the networks by compartment. Based on our limited understanding of the IBX LANmark feature, it would appear that all packets addressed to an individual device actually appear electrically at the coax level at the adapter level at other device locations. It is characteristic of Ethernet LANs to have this problem, and we have to understand how the IBX either aggravates or ameliorates this situation well enough to get concurrence from OS/ISG and DS&T that the security architecture is acceptable. There are also security concerns with "dialing" into an Ethernet, with audit trails of such activity and appropriate access controls. In general, any solution for LANs on a complex-wide scale has similar problems, and it is unclear whether any good alternatives other than the IBX will fare any better for the DS&T on these issues.

b. What are the performance implications of Ethernet on the IBX? How does the IBX fare in comparison to other solutions and potential requirements? We know that the IBX LANmark does fairly well in comparison to "real" Ethernet for such simple cases as the proposed test, but how does it scale up? What is the performance of the IBX versus a baseline test with coaxial cable? Does the added flexibility and functionality of the IBX solution outweigh some performance degradation, and if so, how much degradation is tolerable before customers complain that it's not as good as what they're used to with "real" Ethernet. Does the typical 1 Megabit/second performance of an Ethernet, whether over the IBX or not, represent a useful and appropriate investment in LAN technology at this time?

c. What are the additional requirements on the database and other administrative aspects of operating an IBX with the Ethernet capability? With the possibility of segmenting LANs logically, how will the OIT operational support manage the configurations required and ensure that LANs are not disrupted, bridged or otherwise compromised by operational procedures?

d. Does the IBX Ethernet feature operate across switch boundaries? I.e., can the Ethernet LANmark feature transit IXL links between, for example, Reston and Headquarters? What are the performance and traffic loading implications of such links? How can this be tested, given that the Headquarters switches are all critical production systems and not normally available for live tests?

Attachment A

DRAFT

IBX ETHERNET QUESTIONS (Continued)

e. What are the network management requirements and capabilities of the IBX to meet these requirements? Ethernet LANs are notoriously sensitive to contention and to single device failures. Does the IBX help in this area or add further to the problem?

f. What are the network addressing and bridging features offered by the IBX? Can the IBX resolve duplicate Ethernet adapter addresses on sub-networks? Can the IBX "bridge" between coaxial Ethernet segments so that one phone can serve multiple devices? What are the applications for a "station" Ethernet data interface versus a "host" Ethernet data interface -- two different Intecom products?